ISE 225 Engineering Statistics I

Spring Semester 2021

Mon, Wed 12:00-1:50pm

Prerequisite: ISE 220 Probability Concepts in Engineering

Course Objective:

This course will develop skills necessary for an engineer to

- Gather data from a population which is of interest for some question or experiment
- Describe and summarize features of the data
- Infer properties of a population using hypothesis tests, confidence intervals, and Analysis of Variance (ANOVA)
- Understand the basics of statistical learning
- Build and validate statistical models
- Use the R statistical software

Instructor:

Haomiao Jin, PhD

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Office Hour: Meet by Schedule

TA: Sina Baharlouei

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Textbook:

(Required) R Witte and J Witte, *Statistics*, 11th edition

(Required) G James, D Witten, T Hastie, R Tibshirani, *An Introduction to Statistical Learning: with Applications in R*

Homework: Weekly

Scoring: Homework (30%), Mid-exam (30%), Final Exam (30%), Reading Summary (10%)

Syllabus:

Week	Topic	Text Sections
W1: Jan 20 W2: Jan 25, 27	Introduction, using R, descriptive statistics	WW: Ch 1-5
W3: Feb 1, 3 W4: Feb 8, 10 W5: Feb 17	Single sample analysis: Point estimation, Hypothesis testing, Confidence interval	WW: Ch 8-13
W6: Feb 22, 24 W7: Mar 1, 3 W8: Mar 8	Two-sample analysis, ANOVA	WW: Ch 14-17
W8: Mar 10 W9: Mar 15	Mid-exam review Mid-exam	
W9: Mar 17	No class	
W10: Mar 22, 24	Basics of statistical learning	JWHT: Ch 1-2
W11: Mar 29, 31 W12: Apr 5	Linear regression	JWHT: Ch 3
W12: Apr 7 W13: Apr 12	Logistic regression and other classification techniques	JWHT: Ch 4
W13: Apr 14	Model validation	JWHT: Ch 5
W14: Apr 19, 21	Regularized regression	JWHT: Ch 6
W15: Apr 26	Introduction to Nonlinear techniques	JWHT: Ch7-9
Final exam review: Apr 28 Final exam: May 7 (11-1pm)		